

DWR Experimental Winter Outlook

Water Year 2013

November 26, 2012

The Department of Water Resources convened researchers from the University of Colorado, the California-Nevada Applications Program RISA Center at the Scripps Institution of Oceanography, and the National Oceanic and Atmospheric Administration's (NOAA's) Hydrometeorology Testbed program to develop and review an experimental forecast for this winter's water supply outlook.

A primary source of skill in making seasonal climate outlooks for the Western U.S. is the status and expected behavior of the El Niño-Southern Oscillation (ENSO). ENSO neutral conditions were diagnosed in the tropical Pacific Ocean in late 2012, and will probably continue into early 2013. Given ENSO neutral conditions, an experimental statistical forecast combined with consideration of a negative Pacific Decadal Oscillation (PDO), positive Atlantic Multidecadal Oscillation, average of North Atlantic Oscillation conditions, Alaskan temperatures, and Indian Ocean Dipole status suggests the following outlook:

- Drier than normal for the northern two-thirds of California and in southeastern California through April
- Near-normal or possibly wetter than average for the central and south coastal regions
- Drier than normal for the Colorado River Basin, an important source of water supply for Southern California

"The expected negative PDO appears to carry the most weight as a forcing factor this winter", according to Klaus Wolter of the University of Colorado, who was the chief architect of the experimental outlook. Other factors such as the Madden-Julian Oscillation (MJO) may also be influential, although the MJO acts at shorter time scales than seasonally persistent patterns such as ENSO. This winter's expected MJO conditions do not favor enhancement of atmospheric river (AR) storms, which are often important to both water supply and flood conditions in the state. "Our Hydrometeorology Testbed work has provided preliminary evidence that AR storms making landfall in California are most active in certain phases of the MJO", said Marty Ralph of NOAA.

Water Year 2012, which ended on September 30, 2012, was a dry year for most of California. It was the first dry year since the three-year dry period of 2007-09. Allocations for DWR's State Water Project contractors were 65 percent of requested amounts, and allocations for the federal Central Valley Project's south of Delta agricultural customers were 40 percent of requested amounts. Water year 2012 followed a wet 2011, which left storage in most of the state's reservoirs at above-average levels, lessening the impacts of a dry 2012.

The months of December through February are critically important for California's precipitation – on average, half of the state's average annual precipitation occurs during this period, and three-quarters occurs from November through March. California's annual precipitation is dependent on a relatively small number of winter storms – the presence or absence of a few significant winter storms determines whether the water year will be wet or dry.